

Appl. No. 10/630,582
Amd. Dated July 14, 2005
Reply to Office Action of June 27, 2005

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): Apparatus for adding wavelengths to a WDM signal, said apparatus comprising:

a first optical device that combines input to P input ports into a single output signal, each of said P input ports accepting non-overlapping interleaved sets of N/P wavelengths wherein P is greater than one and N is a total number of wavelengths accepted by said P input ports; and
a second optical device that combines said signal output signal with said WDM signal.

Claim 2 (original): The apparatus of claim 1 wherein said first optical device comprises a cyclic AWG.

Claim 3 (original): The apparatus of claim 1 wherein said first optical device comprises an optical interleaver.

Claim 4 (original): The apparatus of claim 1 wherein N is a total number of wavelengths of a wavelength grid of a WDM communication system carrying said WDM signal.

Claim 5 (original): The apparatus of claim 1 wherein optical energy is present at all of said P input ports.

Claim 6 (original): The apparatus of claim 1 wherein optical energy is not present at at least one of said P inputs.

Claim 7 (original): The apparatus of claim 1 further comprising:
an optical combination structure providing an output signal to exactly one of said P inputs of said first optical device and having exactly N/P inputs that are combined to form said output signal.

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Claim 8 (original): The apparatus of claim 7 wherein said optical combination structure comprises a thin film filter.

Claim 9 (original): The apparatus of claim 7 wherein said optical combination structure comprises a polarization beam combiner.

Claim 10 (original): The apparatus of claim 1 further comprising:
an optical combination structure providing an output signal to exactly one of said P inputs of said first optical device and having less than N/P inputs that are combined to form said output signal.

Claim 11 (original): The apparatus of claim 1 wherein said optical combination structure comprises a polarization beam combiner.

Claim 12 (withdrawn): Apparatus for dropping wavelengths from a WDM signal in a WDM communication system employing a WDM grid having N wavelengths, said apparatus comprising:

a first optical device that taps off a portion of said WDM signal; and
a second optical device that receives said tapped off portion of said WDM signal as input and outputs non-overlapping interleaved sets of N/P wavelengths via each of P output ports.

Claim 13 (withdrawn): The apparatus of claim 12 wherein said second optical device comprises a cyclic AWG.

Claim 14 (withdrawn): The apparatus of claim 12 wherein said second optical device comprises an optical deinterleaver.

Claim 15 (withdrawn): The apparatus of claim 12 further comprising:
a third optical device connected to one of said P output ports.

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Claim 16 (withdrawn): The apparatus of claim 15 wherein said third optical device comprises a thin film filter.

Claim 17 (withdrawn): The apparatus of claim 12 further comprising:
a cascaded series of filters connected to one of said P output ports, each one of said cascaded series selecting a single wavelength for output.

Claim 18 (withdrawn): The apparatus of claim 12 further comprising:
a splitter connected to one of said P output ports.

Claim 19 (withdrawn): The apparatus of claim 18 wherein said splitter has N/P outputs.

Claim 20 (withdrawn): The apparatus of claim 18 wherein said splitter has fewer than N/P outputs.

Claim 21 (original): A method for adding wavelengths to a WDM signal, said method comprising:

inputting optical energy to at least one of P inputs of a first optical device each of said P input ports accepting non-overlapping interleaved sets of N/P wavelengths wherein P is greater than one and N is a total number of wavelengths accepted by said P input ports;

combining said optical energy input to said at least one of P inputs and outputting said combined optical energy from said first optical device; and

combining said combined optical energy with said WDM signal.

Claim 22 (original): The method of claim 21 wherein said first optical device comprises a cyclic AWG.

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Claim 23 (original): The method of claim 21 wherein said first optical device comprises an optical interleaver.

Claim 24 (original): The method of claim 21 wherein N is a total number of wavelengths of a wavelength grid of a WDM communication system carrying said WDM signal.

Claim 25 (original): The method of claim 21 wherein optical energy is input to all of said P input ports.

Claim 26 (original): The method of claim 21 further comprising:
providing an optical combination structure that combines a plurality of single wavelength signals into input for one of said P input ports of said first optical device.

Claim 27 (original): The method of claim 26 wherein said plurality of single wavelength signals comprises exactly N/P single wavelength signals.

Claim 28 (original): The method of claim 26 wherein said plurality of single wavelength signals comprises less than N/P single wavelength signals.

Claim 29 (withdrawn): A method for dropping wavelengths from a WDM signal in a WDM communication system employing a WDM grid having N wavelengths, said method comprising:

tapping off a portion of said WDM signal; and
directing said tapped-off portion to an optical device that receives said tapped off portion of said WDM signal as input and outputs non-overlapping interleaved sets of N/P wavelengths via each of P output ports.

Claim 30 (withdrawn): The method of claim 29 wherein said optical device comprises a cyclic AWG.

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Claim 31 (withdrawn): The method of claim 29 wherein said optical device comprises an optical deinterleaver.

Claim 32 (withdrawn): The method of claim 29 further comprising:
directing output of one of said P output ports to input of a splitter having N/P outputs.

Claim 33 (withdrawn): The method of claim 32 further comprising:
for each of said N/P outputs, providing an optical filter to select a single wavelength.

Claim 34 (withdrawn): The method of claim 29 further comprising:
directing output of one of said P output ports to input of a splitter having less than N/P outputs.

Claim 35 (withdrawn): The method of claim 34 further comprising:
for each of said less than N/P outputs, providing an optical filter to select a single wavelength.

Claim 36 (withdrawn): The method of claim 29 further comprising:
directing output of one of said P output ports to an optical filter that selects a single wavelength.

Claim 37 (original): Apparatus for adding wavelengths to a WDM signal, said apparatus comprising:

means for inputting optical energy to at least one of P inputs of a first optical device each of said P input ports accepting non-overlapping interleaved sets of N/P wavelengths wherein P is greater than one and N is a total number of wavelengths accepted by said P input ports;

means for combining said optical energy input to said at least one of P inputs and outputting said combined optical energy from said first optical device; and

means for combining said combined optical energy with said WDM signal.

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Claim 38 (withdrawn): Apparatus for dropping wavelengths from a WDM signal in a WDM communication system employing a WDM grid having N wavelengths, said apparatus comprising:

means for tapping off a portion of said WDM signal; and

means for directing said tapped-off portion to an optical device that receives said tapped off portion of said WDM signal as input and outputs non-overlapping interleaved sets of N/P wavelengths via each of P output ports.